

[Document Type]

SPECIFICATION

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[Title of Invention] INFORMATION RECORDING MEDIUM

[Claims]

[Claim 1]

An information-recording medium comprising:

a pair of electrodes; and a liquid crystal material filled into a gap between said electrodes,

said liquid crystal material having such a property that charge-transport properties vary according to a phase transfer between a plurality of stable liquid crystal phases of the liquid crystal and/or a history of the phase transfer.

[Claim 2]

The information-recording medium according to claim 1, wherein the phase transfer of said liquid crystal material occurs upon a change in temperature of said liquid crystal material.

[Claim 3]

The information-recording medium according to claim 1, wherein the information is recorded with thermal energy applied.

[Claim 4]

The information-recording medium according to claim 1, wherein the information is read with measurement of the value of a photoelectric current generated by light applied to an information-recording portion.

[Claim 5]

The information-recording medium according to claim 1, wherein at least one of said pair of electrodes is transparent to light.

[Claim 6]

The information-recording medium according to claim 1, wherein the thickness of the gap between said electrodes is larger than the size of a domain at least in the initial state of said liquid crystal material.

[Claim 7]

The information-recording medium according to claim 1, wherein a thermal head or a laser beam is used as means for applying thermal energy for said information-recording.

[Claim 8]

The information-recording medium according to claim 1, wherein said liquid crystal material comprises a liquid crystalline charge-transport material, a background for information-recording is in such a state that the charge-transport properties are inhibited, caused by polycrystalline structural defects in the initial state of said liquid crystal charge-transport material, and

information-recording is carried out with phase transfer that occurs in said background upon application of thermal energy.

[Claim 9]

The information-recording medium according to claim 1, wherein two or more charge-transport properties can be developed in a specific liquid crystal phase according to the level of the thermal energy applied.

[Claim 10]

The information-recording medium according to claim 1, wherein said pair of electrodes are provided on a substrate.

[Claim 11]

The information-recording medium according to claim 1, wherein the thickness between said pair of electrodes satisfies both requirements represented by inequalities (A) and (B):

(Permeation depth at excitation light wavelength of liquid crystal material) < (Thickness between pair of electrodes) (A)

(Thickness between pair of electrodes) < (Thickness that can exhibit field strength so as to enable reading of photoelectric current) (B).

[Claim 12]

The information-recording medium according to claim 1, wherein the domain size of said liquid crystal material is smaller than the thickness of the gap between the electrodes.